

**REMARKS**

The Official Action mailed September 10, 2010, has been received and its contents carefully noted. Filed concurrently herewith is a *Request for One Month Extension of Time*, which extends the shortened statutory period for response to January 10, 2011. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on June 5, 2006; September 18, 2006; September 11, 2008; and January 28, 2009.

Claims 25-34 are pending in the present application, of which claims 25, 31, 33 and 34 are independent. Claims 25-31, 33 and 34 have been amended to better recite the features of the present invention. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 2 of the Official Action objects to claim 34 because of the following informalities: In claim 34, line 7, a comma “,” should be added to the front of the word “adding.” The Applicant has revised claim 34 to incorporate this suggestion. Accordingly, reconsideration and withdrawal of the objection are in order and requested.

Paragraph 4 of the Official Action provisionally rejects claim 25 and 33 under the doctrine of obviousness-type double patenting over claim 8 of copending Application No. 12/419,559. Paragraph 4 of the Official Action provisionally rejects claim 31 and 34 under the doctrine of obviousness-type double patenting over claim 9 of copending Application No. 12/419,559.

Applicant respectfully requests that the double patenting rejections be held in abeyance until an indication of allowable subject matter is made in the present application. At such time, the Applicant will respond to any remaining double patenting rejections.

Paragraph 6 of the Official Action rejects claims 25-31, 33 and 34 as obvious based on the combination of U.S. Patent No. 6,311,306 to White and U.S. Patent No. 5,828,672 to Labonte. Paragraph 7 of the Official Action rejects claim 32 as obvious based on the combination of White and Labonte, as applied to claim 31, and U.S. Patent No. 4,277,778 to Persson. The Applicant respectfully traverses the rejections because a *prima facie* case of obviousness cannot be maintained against the independent claims of the present application, as amended.

As stated in MPEP §§ 2142-2144.04, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some reason to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

With respect to independent claims 25, 31, 33 and 34, the prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. These claims recite aspects of the following important technical feature:

-- a redundant bit addition unit configured to add a redundant bit as a lower order bit to each of the first single bit data components to create first two bit data, wherein the redundant bit is determined so that the created first two bit data corresponds to any one

of specific two symbol values of the four symbol values, an interval between the specific two symbol values being largest among the four symbol values --.

The above technical feature is supported, for example, by Applicant's FIG. 5 and associated disclosure. In particular, as shown in Figure 5 at (c), by adding the redundant bit "1" to each bit data of the protected voice data by the redundant bit addition unit 13, the bit data of the protected voice data certainly would correspond to the symbol value +3 or -3. In other words, an interval between the symbol value +3 and the symbol value -3 becomes large. Thereby, a gain at the Nyquist point becomes large (see Applicant's page 13, line 28 to page 14, line 5).

In the specification, the relationship between reception symbols and data bits are explained and it is clear that the symbol values "-3" and "+3" are symbol values for which an interval between their symbols becomes largest.

In the present invention, important data is divided by one bit, and a redundant bit "1" is added to the important data bit. This results in creating a symbol value "-3" if the important bit, redundant bit pair is (1,1) and a symbol value "+3" if the pair is (0,1). It is self-evident that a redundant bit is selected so as to realize such a symbol arrangement. Applicant's page 16, lines 6-10 teaches that although each symbol interval is normally "2" in the case of 4 values, the symbol interval would be "6" according to the invention, which is three times as many as 2. From this, in theory, BER would be improved by approximately 4.8 dB, according to such a claimed configuration.

Thus, in the present invention, the symbols of the important data are arranged at only two points at which an interval between symbols is large, which brings more advantage for reception. Therefore, it is possible to surely make an error correction even if communication conditions in a transmission path are fairly bad. Thus, if the BER is high, in other words, the communication state is not preferable, the sound quality by decoding with the transmission and reception device according to this embodiment would be more preferable than with a Viterbi decoder, and high sound quality may be realized (see Applicant's page 17, line 2 to page 18, line 7).

The above technical feature is neither disclosed nor suggested by White et al., Labonte et al. and Persson, either taken alone or in combination.

Particularly, the present invention is unique in that a redundant bit is added to each of the single bit data components obtained by dividing important data to create two bit data that corresponds to any one of two symbol values (e.g., -3 and +3) of four 4-level FSK symbol values (-3, -1, +1, +3), an interval between which is largest.

In White, important bits (higher order bits) and unimportant bits (lower order bits) are combined to create a symbol. Therefore, there is the possibility that the created symbol is arranged at any one of the points +1 and -1. However, White fails to disclose adding a redundant bit to an important bit and dividing an unimportant bit into two bit data.

Even if White and Labonte are combined, the redundant combination will not result in the unique technical feature of the present invention. That is, the technique of adding a redundant bit to each of the single bit data components obtained by dividing important data to create two bit data that corresponds to any one of two symbol values (e.g., -3 and +3) of four 4-level FSK symbol values, of which an interval between which is largest would not have been taught. Persson fails to overcome the deficiency in the disclosures of White and Labonte.

Thus, one of ordinary skill in the art would not have been led to recognize that data important for communication is arranged at two specific symbols of 4-level FSK symbols, which are positioned away from each other by the largest distance, or that such a relationship would be advantageous upon reception to increase gain, by adding a redundant bit to each of the data bits.


Because White, Labonte and Persson do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained with respect to independent claims 25, 31, 33 and 34. Therefore, Applicant believes the rejections of claim 25, 31, 33 and 34 and claims dependent therefrom are not proper.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized to charge fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(a), 1.20(b), 1.20(c), and 1.20(d) (except the Issue Fee) which may be required now or hereafter, or credit any overpayment to Deposit Account No. 50-2280.

Respectfully submitted,

  
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Eric J. Robinson  
Reg. No. 38,285

Robinson Intellectual Property Law Office, P.C.  
3975 Fair Ridge Drive  
Suite 20 North  
Fairfax, Virginia 22033  
(571) 434-6789